

**IMPROVED SWITCH CAPACITOR CIRCUIT AND APPLICATIONS  
THEREOF**

**ABSTRACT OF THE DISCLOSURE**

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An improved switch capacitor circuit includes a capacitor, a 1<sup>st</sup> voltage reference module, a 2<sup>nd</sup> voltage reference module, and a plurality of switching elements. The capacitor is operably coupled via the plurality of switching elements to sample an input signal during a 1<sup>st</sup> interval of a sampling period and during a 2<sup>nd</sup> interval of the sampling period to provide a representation of the input signal. The 2<sup>nd</sup> reference module produces a 2<sup>nd</sup> reference voltage that is representative of the common mode of the supply (e.g.  $V_{DD}$  and  $V_{SS}$ ). The 1<sup>st</sup> voltage reference module produces a 1<sup>st</sup> reference voltage that is representative of the common mode of the analog input signal. As such, the capacitor is charged during the 1<sup>st</sup> interval based on the 1<sup>st</sup> reference voltage and discharged during the 2<sup>nd</sup> interval based on the 2<sup>nd</sup> reference voltage.

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